MTH 461/561 Due Thursday, October 18
Fall 2018

Homework 5

Problem 1. *Problem 5.8.4 from Etingof.*

Problem 2. *Exercise 5.8.5.*

Problem 3. *Problem 4.12.4.*

A hint for this last problem:

Let G be the automorphism group of Γ and make it act on the vector space V having the set vertices of Γ as a basis, by permuting those basis elements. Thinking of the adjacency matrix A as an endomorphism of the same vector space V, show that G commutes with A.

Finally, show if A had distinct eigenvalues then the collection of operators commuting with A is itself commutative (i.e. every two such operators mutually commute), contradicting the fact that G is not abelian.